# *Twenty Years of Change*

*Top initiatives advanced by Mecklenburg County Code Enforcement and the Building Development Commission 1996 to 2016*

The Building-Development Commission (BDC) and Mecklenburg County Code Enforcement have worked together over the years to advance a wide range of initiatives, benefitting both Mecklenburg County citizens as well as the Department's customers and staff. The following is a short list of the **most significant** initiatives from the past 20 years.

## Internet Permitting

Mecklenburg County has a long history of contractor-permitting by direct computer entry. In 1992, this was available to select contractors by remote access, but beginning in 1999, the County provided internet permitting to all contractors not subject to plan review. Today, some form of internet permitting is used by nearly every Code Enforcement customer.

## Consistency Teams

Combining inspector mobile data terminal use with mobile phones, Mecklenburg County inspectors became 95% field-based in 1995, reporting directly to their assigned territories daily and visiting the office every 10 days for administrative meetings. While this was highly efficient, it deprived inspectors of office time to match notes on Code interpretations. The result was an increase in customer concern over the consistency of interpretations. Mecklenburg County responded in 1997 by introducing "Consistency Teams" in each inspection discipline – building, electrical, mechanical and plumbing. The teams deal with all consistency issues from the industry, discuss them in regular meetings attended by the industry, and render decisions on correct local interpretations of the Code. These interpretations are, in turn, distributed to field inspectors, the industry, and posted online. Since their introduction, Consistency Teams have been credited with solving a wide range of interpretation issues, as well as doing wonders to bring the Department and industry together.

## Internet Access to All Documents and Records

North Carolina public records laws are robust; the Department retains records for two to six years (and longer for some designated projects). Customers often seek copies of permitting and inspection records on specific addresses, as well as documentation on Certificates of Occupancy. In 2001, using imaging technology, Code Enforcement migrated to a completely paperless process, and made all records available to customers online.

## Express Review

Introduced in 1997-1998, Express Review is a premium service/premium fee program. Customers schedule a Commercial Plan Review slot in advance, with the owner's design team present during the

review. Architects & Engineers (A&E's) are given the opportunity to make and initial minor changes, increasing the likelihood of passing review and gaining the permit within 24 hours.

## Residential Technical Assistance Center (RTAC)

Introduced in 1998, this service focuses on residential customers by giving them access to code officials who can answer involved technical questions, often when the project is in the very early stages. Customers may walk-in, call or e-mail questions to staff who provide quick answers to the Code problems described. Not intended to be a second opinion, this service (along with CTAC, see below) is focused on projects without an assigned plan reviewer or inspector. RTAC averages more than 1,000 calls per month.

## Commercial Technical Assistance Center (CTAC)

When the Residential Technical Assistance Center (RTAC) proved to be successful, the Department introduced the equivalent commercial code tool, CTAC, in 2000. Again, the idea was to give customers access to commercial code information and quick answers to the code problems described, even when the project was in its early stages. As in RTAC, customers may walk-in, call or e-mail questions to staff, and the information provided is not intended to be a second opinion. This service also is focused on projects without an assigned plan reviewer or inspector. Since its introduction, CTAC has averaged approximately 800 customer calls per month. Based on this success, in 2003, CTAC expanded into small, quick plan reviews.

## Third-Party Inspections/Plan Review Program

In 1999, at the request of the BDC, the N.C. General Assembly revised the General Statutes to allow use of third-party code enforcement work for certain projects. This program allows the customer to contract with the Department and pay for "added code enforcement services;" the Department, in turn, contracts with a third party (carrying N.C. Code Official Qualifications) to provide the service on the designated project. The program has been used extensively at Charlotte-Douglas Airport, as well as many high-rise projects, specifically for the electrical finish stage. The Northlake Mall tenant upfit in 2005 used third-party plan review on over 130 tenant spaces over 4 months, allowing the mall to open on time.

## Carbon Monoxide Alarm Ordinance

In 2000, four people died of carbon monoxide poisoning at Cedar Mill Condominiums. The Department worked with the Charlotte Fire Department and the County Fire Marshal's Office to outline a Five-Part Carbon Monoxide Strategy. A key part of this strategy was the introduction of a countywide requirement for carbon monoxide (CO) alarms in residential units. Since this would be the first CO alarm ordinance in the Southeastern U.S., it was aggressively debated. Using a health ordinance vehicle, the Mecklenburg BOCC voted in 2001 to enact a carbon monoxide alarm ordinance in all residential units with fossil fuel burning devices. After the December 2002 ice storm, the BOCC voted to extend this ordinance, requiring carbon monoxide alarms in all residential units; this addressed the 25% national incidence of CO poisoning from portable sources.

## N.C. Rehab Code

The creation of this Code is owed, in large part, to the BDC and Department's determination to bring a good idea to fruition, in the face of obstacles. At the request of a local task force, in December 2000 Mecklenburg County presented a proposal to the N.C. Building Code Council to adopt a pilot program

using the widely acclaimed New Jersey Rehab Code. Though the BCC voted the proposal down, the Department pursued it further. Consequently, a legislative initiative emerged in spring 2001 to create a NC Rehab Code four-year pilot. The initiative eventually gained wide support and passed as law in 2001. As the lead local jurisdiction, Mecklenburg County created the Code, while also working with other authorities to create training programs and a supporting website. On March 15, 2002, the N.C. Rehab Code became the first electronically published code in N.C.

## OnSchedule Commercial Plan Review Process

In fall 2002, the Department designed a new commercial plan review service with predictable timelines. Launched as "OnSchedule" and initiated in March 2003, this radical idea gives customers the ability to schedule all reviews months in advance, and submit plans only the day before, so there are no long waiting periods to enter the review process. When they use plan review comments that are available electronically, applicants achieve far more certainty about the permitting schedule and, ultimately, have significant control over their timelines during plan review.

## Meck-SI: Paperless Special Inspections Process and Website

With the implementation of the 2002 NC Building Code, Chapter 17 – Section 1704 was introduced in North Carolina. After North Carolina's "qualified adoption of SI," the Department worked with local professionals and affected industry members to develop a program that addressed relevant code compliance issues, while keeping the process as simple as possible; this group also established a goal of making the SI process in Mecklenburg County fully electronic and totally paperless. On January 17, 2006, Code Enforcement initiated **{** HYPERLINK "http://www.meck-si.com" **}**, the first paperless special inspections process in the United States. After a lengthy ad hoc committee process, the N.C. Building Code Council adopted uniform SI standards across the State of North Carolina similar to the Department's proposal.

## Live-Work Code Change

The Live-Work Code Change initiative originated in 1999 with a local task force request to develop code compliance options for this new unit type occurring in the market. Live-Work units propose to allow residents to operate public service businesses with employees out of their residences, with the public entering the work area of their units to acquire the service. Live-Work units are throwbacks to 1900 era planning, where one walked to all needed services (the typical corner commercial store scattered across many old cities), re-emerging in the current trend known as Traditional Neighborhood Design (TND). However, before the Live-Work Code Change, building codes made no provision for any use other than residential in the International Residential Code. Consequently, through three ICC code change cycles, the Department worked to build a coalition supporting a Live-Work Code provision in the IRC/IBC. This effort was successful in May 2007; as a result, this unit type became legal nationwide under the 2009 IBC/IRC.

## Inspection by Appointment (IBA)

Conceived by an industry-department task force, IBA gives customers another tool, matching inspector availability to particular construction scheduling problems (IBA joins 3rd Party Inspections and Overtime Inspections in the tool kit customers have available to manage these schedule problems). An added fee and premium service, IBA allows a customer to reserve inspector time in two-hour increments, improving their chances to pass inspections. In this respect, it is the field spinoff of the highly successful, office-based Express Review service.

## Customer Self Permitting - HIP/TIP

Since 2005, the Department has aggressively pursued web based tools that would make *taking out a permit as easy as buying an item through a website.* Beyond the programming required for this vision, the work also involved the development of many related tools (City-Towns dashboard, contractor license scraping, among others). In May of 2008, the Department introduced the first self-permitting component, Homeowner Internet Permits (HIP), followed immediately by Trades Internet Permits (TIP) for contractors. TIP currently manages 25% of Code Enforcement's permit load.

## Code Compliance Task Force (CCTF): Three-Part Strategy including Contractor Pass Rate Incentives

The CCTF reconvened in 2005 to address an inspection failure rate at or above 25%, proposing three changes:

a) Auto-Notification: Allows the contractor to know when an inspector is headed to the site to perform an inspection, in the event the contractor wishes to be available for questions, or discussion of problems.
b) Point-of-Contact: Requires all contractors to maintain an e-mail contact point, assuring that Department data on contractor failure rates goes to an accountable person who will respond to problems (high failures, etc.).
c) Pass Rate Incentives Program (aka: high inspection failure-rate contractor program): Introduced a new set of requirements for contractors with failure rates above 40% or greater, imposing requirements on site preparation and training.

These changes were phased in from 2006 thru 2007. By April 2010, the inspection failure rate dropped from 25% to 13%.

## 2008 Proposed Commercial Plan Review Revisions

In 2007, the Department launched an intense three-part evaluation of the commercial permitting process including: a) process engineering evaluation of workflow, b) reconvening of the Plan Review Task Force, and c) evaluation of plan review scope of work. The result was a consolidated report entitled 2008 Proposed Commercial Plan Review Revisions, which is posted on meckpermit.com**{** HYPERLINK "http://www.meckpermit.com/" \h **}** In 2008 and 2009, the Department implemented several parts of this strategy, including:

- Creating a Mega team for large, complex projects and revising the LUESA Fee Ordinance so Mega projects are assessed fees in accordance with the scope of work
- Expanded the CTAC scope of work
- Revised Approved-As-Noted criteria
- Implemented electronic addressing
- Weekly web posting of booking lead times
- Revised the Abandoned Projects policy
- Development of tools improving AE-to-staff "in review" dialogue, including Interactive Review, Conditional Permitting and Priority Review (introduced in April 2010).

This initiative concluded with the development and introduction of AE Pass Rate incentives program (see below).

## A/E Pass Rate Incentives

This program created a special stream for high performing (high plan review pass rate) A/E's and the converse for A/E's who are challenged in their efforts to produce code-compliant construction drawings. AE's are graded quarterly on a pass-fail basis, and ranked by three categories: Superior, Successful and Poor.

- Superior A/E's gain access to premium and other services which benefit their project schedules
- Successful A/E's retain access to basic program services, much like today.
- Poor A/E's are restricted from premium service and receive added requirements relevant to past challenges.

Since starting A/E Pass Rate Incentives on January 1, 2010, pass rates have improved from 45% to 70-75%

## 2010 Reorganization Plan

In response to a budget crisis in FY10, the Department launched an assessment of how permitting & inspections services were organized. With extensive input from line staff and management, as well as customers, a number of different options were considered. Ultimately, a change to team-based service delivery was thought to align more closely with change tremors occurring in the commercial construction industry. Consequently, on May 5th, 2010, Code Enforcement converted service delivery to the 2010 Reorganization Plan. The plan includes a number of changes, among them new B-E-M/P Code Administrator positions, focusing full-time on interpretations, appeals, consistency and training. Perhaps most significantly, the plan also introduced the new team-based field service delivery approach, with the teams led by Code Enforcement Managers, serving as a ***"Key Point-of-Contact"*** for customers interfacing with us on field operations.

## Electronic Plan Submittal Takes Department to 98% Paperless Process

From 2006 through 2012, the Department worked on converting the plan review submittal and review process from paper to electronic. In 2008, the electronic residential master plan submittal program (RDS-EPS; a reciprocal review-joint effort with Raleigh) was initiated, and later extended to custom single family submittals. Commercial EPS followed in OnSchedule and Mega projects in January 2012. In November 2013, EPS was added in CTAC small project reviews making our entire process 98% paperless. On March 1, 2013, the Department announced that all reviews, other than homeowner projects would be electronic.

## Customer Service Center (CSC)

This project addressed the problem that, while our process is 98% paperless with some of the most advanced supporting technology in the U.S., it was challenging for a small group (7%+/-) of our customers. It also tackled a growing gap between customers who are well schooled in our process, and those who are either new to it, or use it infrequently enough that understanding the "ins and outs" is not intuitive, or they are uncomfortable with the electronic medium. Though gaining input from "anonymous customers" was challenging, the BDC and Department managed to assemble a novice/infrequent customer focus group, which met six times from January thru May 2014, outlining design criteria for the CSC. On May 20, 2014, the BDC voted in support of a three-part design concept including:

1) A graphic chart summarizing all CSC Focus Group comments on "problems" & "fixes," designating the focus of various service problems among different customer interest groups
2) Bubble diagram showing "how the CSC might work"
3) Summary of available technology necessary to support the CSC design concept

Detailed development of the CSC included two phases, from summer 2014 through winter 2015, with the hiring of 7 dedicated CSC staff, the design and construction of supporting space in the new LUESA offices at 2145 Suttle Avenue and acquisition of supporting technology. The CSC officially opened on January 8, 2016, as one of the most advanced service centers for novice customers in the eastern U.S.

## BIM-IPD and the Hybrid Collaborative Delivery (HCD) Team:

*Background*

Many design and construction community leaders believe Building Information Modeling (BIM) and Integrated Project Delivery (IPD), along with other team-based project delivery methods (design-build, CM, etc.), will dominate the commercial sector within five years. This trend responds to a historic efficiency problem in the construction industry, is supported by the rapid growth of BIM, especially in construction offices, where many believe it is impossible to deliver sustainable design projects without BIM. With an emphasis on collaborative work within the model, the result is that the owner's entire team (A/E, general contractor, et. al.) begins working on problem solving earlier in the project.

*Department response*

After studying BIM-IPD from 2007-2009, the Department predicted this would cause a revolution in the permitting and inspection process, with plan reviewers and inspectors both working inside the model alongside the owner's team, with results exported to the Department's record system. This posed extreme challenges for the normal permitting and inspection (P&I) system and consequently, the County launched on a series of initiatives, in anticipation of how BIM-IPD would impact the customer and the Department, including the following:

- N.C. Administrative Code change: worked jointly with the City of Raleigh and private sector advocates, proposing a new section 106.2.3.1 in the code, providing an alternate BIM-IPD permitting strategy, saving these projects from a mountain of paperwork. The Building Code Council approved this in July 2011.
- CHS BIM pilot: a joint project between Carolinas Healthcare Systems and Mecklenburg County, allowing Department staff to work in the owner's model in a collaborative setting, defining how permitting and inspections will work in a future BIM-IPD world, and providing critical programming information on how to modify POSSE and electronic plan submittal and review to mesh with BIM-IPD project delivery. The pilot covered 3 projects: CMC-Morrocroft Emergency Department (delivered in May 2014), CMC-Davidson Behavioral Health (delivered in April 2014), CMC-Core Lab (delivered in January, 2015).
- Virtual Inspections (VI) Pilot: the goal of this pilot was to identify both the benefit of using BIM for virtual inspections, as well as the limits, addressing a BIM-IPD industry question of whether 3D modeling tools could be used for virtual inspections, to check for code compliance issues and details before the full-scale model is constructed. Two staff spent 5 months testing virtual inspection in summer and fall of 2013. In December 2014, the Department delivered a final VI pilot report to the BDC, which also provided key information for the design of the HCD Team.
- Pilot on A/E seal use in BIM-IPD w/ N.C. Licensing Boards: proposed jointly by CHS & Meck County and approved by both Boards in April-May 2013, only for CHS-Meck projects, this pilot addressed how architect and engineer seals would work inside projects using both BIM and IPD

or a team-based equivalent delivery mechanism. Originally including CMC-Morrocroft, CMC Davidson Behavioral Health and CMC-Core Lab, in June 2014 the A/E Boards approved adding the VA Healthcare Center and Davidson College Martin Science Building to the pilot. CHS & Meck submitted 5 semi-annual reports to both boards from October 2013 through October 2015. Subsequently, in fall 2015, both the NC Board of Architecture and the NC Board of Engineers approved an alternate set of criteria for A/E use of seals on BIM-IPD projects.

- Creation the HCD Team: this initiative was about providing a new service stream for BIM-IPD projects or BIM-collaborative projects, with a goal of working more efficiently on these projects by eliminating the classic plan review/inspections workflow and instead having a team of code officials handling projects from start to finish. So code officials work both as plan reviewers and inspectors, in a manner similar to the previous Rehab Code Team. On Dec. 3, 2013, the Mecklenburg County Board of Commissioners approved an RFBA adding 16 positions to create the team, including a project manager, 2 BIM navigators, 12 code officials plus a project coordinator. The team began work on July 1, 2014, working out of a big room space to promote team collaboration, the BIM-IPD bullpen. At this writing, the team's first project, the VA Healthcare Center, is complete, with five other large projects in the works: Davidson College's Martin Science Building, the Westin Office Building, Crescent Stonewall Station, Sealed Air and the Brigham Hotel.

## Owner-Developer Dashboard

This initiative expanded the meckpermit.com front page layout, providing owner-developers with their own tool box with four categories of information; a) getting started, b) department lead times, and c) check project status, and d) special services. The page design was developed with industry reps, reviewed and approved by the BDC and went live on September 6, 2013.

## Small Business Webpage

An offshoot of the Owner-Developer Dashboard initiative, this focused on the particular needs of small businesses in complying with local and state regulations, while they relocate or get up and running. To address that we added the following features to the new Owner-Developer web page:

- New button in the "Getting Started" column, entitled "Starting a Small Business?"
- Links on regulatory requirements to license & tax requirements, permits, zoning, CTAC
- Resource links
- Also included: Department summary page on the benefit of using N.C. licensed A/E's and contractors

The Department worked with the Small Business Advisory Board, reviewing the P&I process and supporting technology. Based on comments in that meeting and design sessions with the LUESA Director, the final design took shape and the webpage went live on September 23, 2013.

## A/E Feedback tool

In 2012, the Department contracted with Client Feedback Tool of Raleigh to design an automated vehicle for A/E feedback on their customer service experience in OnSchedule and mega project plan review cycles. The tool auto sends a survey request to A/E seal holders at the completion of a review cycle, posing 7 questions and offering the opportunity to offer other comments. High and low threshold flags notify managers if customers have endured a challenging experience, or are elated with service. FY15 year-end survey results (comparable to the previous 18 months) indicated the following:

- 1,738 respondents; a 16% response rate, which is very good
- Responses included a total of 10,558 grades
- 3.1% of the grades fell in the grade ranking of unacceptable-needed improvement
- 47.8% of the grades fell in the grade ranking of acceptable-met expectations
- 49% of the grades fell in the grade ranking of exceeded expectations-excellent-exceptional.

## A/E-GC-Builder Task Force

In response to three industry letters in February 2014, the BDC called for this industry-wide task force and assigned 19 topics or action items to the effort. The task force held 10 meetings between September 25, 2014, and February 5, 2015, with industry attendance per meeting averaging eleven. The resulting 17-page Final Report was delivered to the BDC in a special March 3, 2015, meeting, and may be viewed at this web address:

http://charmeck.org/mecklenburg/county/LUESA/CodeEnforcement/Tools/Publications/Documents/FINAL%20AE-GC-Builder%20Task%20Force%20Report%2002.10.2015.pdf

The final report covers a wide range of topics including "best practice" for both the Department and industry, consistency, RTAPs, Meck-SI, inspection trip time allocations and additional topics. At this writing, over half the recommended changes/action items have been complete, and the Department updates the BDC regarding progress on the remaining items by quarterly reports and a progress tracking chart.

## 2015-17 Three-Phase Inspections Realignment

The post-recession increase in workload, especially on large and multi-family projects, caused the Department to rethink the allocation of team-based inspection resources introduced with the 2010 reorganization. That initiative always planned for a future inspection team dedicated to large (Mega) projects. Consequently, in April 2015, the Department proposed a 3-phased inspection realignment:

- Phase I: create a mega-multifamily inspections team, focusing on our most complex projects. Initiated on June 30, 2015, this new service been well received by customers, and also aggressively addressed a number of task force recommendations.
- Phase II: replace the remaining geographically organized teams, with commercial and residential teams, starting June 30, 2016.
- Phase III: combine mega plan review and inspections, tentatively scheduled for June 2017.

## Building With Our Veterans

This program is designed to give veterans an opportunity to move into the code enforcement field, while at the same time creating another Department resource for future hires. Veterans spend a year taking required courses through Central Piedmont Community College and at the same time apprenticing alongside Department code officials. At the conclusion of the year, graduates are eligible to sit for the code official certification exams, held by the N.C. Qualification Board, and if successful, apply for open positions in the Department. This program is designed to offer a solid long-term career path to veterans interested in construction, while at the same time providing the Department with a new stream of candidates, well-positioned to excel in code enforcement work.

## ISO rating of #1 for Commercial Construction

Insurance Services Office (ISO) audits began in Mecklenburg County in 1992. Those first reports graded Mecklenburg County with a '4' in commercial code enforcement and a '10' in residential. A subsequent 1997 audit elevated those numbers to '3' and '10' respectively, but these results fell far below local government expectations. After close analysis of the ISO grading criteria, we identified a number of major deficiencies. Consequently, in 1999 and 2000, Code Enforcement developed a 14-point strategy to elevate the Department's grade to an ISO rating of 1, the highest grade possible. To support this effort, we introduced four new policies in February 2000, addressing a number of key topics. ISO audited Code Enforcement again in September 2001. As a result of the 14-point strategy, and a tremendous effort by staff and managers, in May 2003, ISO awarded the Department an ISO grade of '1' for commercial work, making Mecklenburg County the largest authority in the United States with this grade. Since that time, the Department has retained its ISO grade of '1' for commercial work in 2007 and 2012 audits.

Note: any list summarizing 20 years of department accomplishments inevitably will omit some projects that were designed jointly with customer and consequently were very important to them. That includes the following projects, many of which have further information on meckpermit.com.

- Internet Support of Inspections
- Residential Drawing Submittal (RDS)
- Data Customer Focus Group
- Plan Review Task Force (PRTF)
- meckpermit.com
- Green Permit Rebates
- Electric Vehicle (EV) stations